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NATIONAL URANIUM TAILINGS PROGRAM

DATA STANDARDS MANUAL

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DATA STANDARDS MANUAL

TABLE OF CONTENTS

		Page
1.	INTRODUCTION	1
	1.1 Importance of Standards	2
	1.2 Data Administration	3
	1.3 Purpose and Content	5
2.	DATA STANDARDS	6
	2.1 Location Data	6
	2.2 Names	7
	2.3 Units	7
	2.4 Quality	7
	2.5 Tombstone and Bibliographic Data	8
3.	CODING STANDARDS	10
	3.1 Sample Type	11
	3.2 Sample Treatment	12
	3.3 Measurement Type	13
4.	PROCEDURAL STANDARDS	14

APPENDIX A - DATA DICTIONARY

1. INTRODUCTION

The National Uranium Tailings Program (NUTP) was established to support research and development into the long-term environmental impact of the more than 100 million tonnes of uranium tailings in Canada. In proposing the NUTP, the Technical Planning Group on Uranium Tailings Research placed highest priority on producing "hard" data relevant to tailings sites. Many organizations collect data related to tailings but these data are not coordinated. So a national uranium wate management data base was created as a repository for data from the many sources.

The sources all have slightly different purposes, so have slightly different collection and processing techniques. Different organizations use different naming conventions. CANUT attempts to accomodate all of this variety and still maintain order by establishing standard definitions and names and providing secondary fields to also store the data originator's nomenclature.

Since the requirements for such data are not completely defined, the Canadian Uranium Tailings data base (CANUT) was developed as a prototype. This will permit NUTP officers and users of tailings data to experiment and evolve a measurement program that meets the program's needs.

1.1 Importance of Standards

A database that gets input from several sources and is used by many people has the inherent danger of getting "out of hand". To maintain a useful database, it is necessary to define standards for the system -- standards on the type and definition of data to be

included, common codes applied to data from all sources, fully defined meaning of quality of the data, and procedures to control the use and maintenance of the data.

Standards ensure the consistency and quality of the data in the database. They are essential to maintain users' confidence and to ensure that the data represent what they are expected to represent.

1.2 Data Administration

Data administration is the process of developing and administering the policies, procedures, practices and plans for the definition, organization, protection and efficient utilization of data.

Data administration of CANUT is the responsibility of a Data Administrator reporting to the Director of NUTP and assisted by the Technical Advisory Committee, to develop, maintain and review the data quality standards and to apply these standards to each source of data. This is not a one-time activity but must continue through the life of the database and adjustments are made in the NUTP as a result of changes in concept and technology.

The total data administration process will ensure standards and continuity in relation to:

1. Classification and Coding;
2. Data Analysis and Data Modelling:
3. Database Analysis and Development.

1. Classification and Coding. Most changes to the coding will be extensions of or additions to the structure. There may be some significant changes as the emphasis shifts to application modelling and design of mitigative measures. Changes of any magnitude must be evaluated for impact on the database and its application programs and systems.

2. Data Analysis and Data Modelling. The CANUT database is primarily for raw data but also contains bibliographic data, tailings site history and other reference material. For this reason the design of the CANUT database is expected to remain relatively static for the life of the NUTP.

   The development of application programs and pathway models will require different views of the data in terms of raw and derived data. Any actions which alter the data will require the creation and management of distinct databases specific to these models.

3. Data Base Analysis and Development. The Database Administrator will also monitor the level of usage of the database, the kinds of data people are looking for or not looking for, and the degree to which the structure and content of the database satisfy the community of users. With this information, the Database Administrator is in a positions to modify, update, delete or add to the database so that it evolves to meet the changing needs of the users. Therefore, any user who has needs that are not met by the database should let the Data Administrator know of his need.

1.3 Purpose and Content

This manual describes a) the standards for accepting and converting data into the Canadian Uranium Tailings (CANUT) database, b) the coding standards used in the database, c) suggestions to establish standards for the quality of data, d) and procedures for updating the content and structure of CANUT and maintaining quality control of the database.

The manual is a common guide for the people supplying the data, for the NUTP staff responsible for maintaining the integrity and content of the database and for users of the system.

2. DATA STANDARDS

Data must have certain characteristics before they can be included in the CANUT database. These characteristics relate to the sample's relevance to the problem, the completeness, quality, state of the data, units, and technique of analysis.

The minimum information requirement of samples for analytical purposes would be location, sample type, measurement code, value of the measurement and units. Edit rules have been specified for each data element in the database (Appendix A). If the minimum requirements are not met, the data will not be accepted in the database.

Derived data (e.g. transfer coefficient, hydraulic gradient, etc.) will not be stored. They can be computed when required. This will facilitate changes to the data without requiring multiple fields to be updated.

2.1 Location Data

Location must be designated before data will be accepted, location can be UTM coordinates or the name of the tailings site to which the data are relevant. Only samples within 20 km of a tailings site have been included in the initial data.

To provide "background" levels, data which are near to but "upstream" or "upwind" and unaffected by tailings sites should be available. These are included as a dummy variable called "upstream". It is essential to know the coordinates where these data were collected in order to determine which tailings site they are relevant to.

2.2 Names

The industry does not have standard place names. Therefore, the database dictates the names which are allowed. These names must be used exactly as shown since the system doesn't recognize spelling errors, aliases or unauthorized abbreviations.

2.3 Units

Usually, data will be stored in the original measurement units for each separate kind of measurement. This removes conversion errors and processing time, but requires the system to accept a large list of standard units.

Only units defined in the standard list are accepted. New units must be added to the list prior to inputting the data they apply to.

Data can be converted to other units on output by using standard S2K computing functions.

2.4 Quality Code (C1104)

The "quality" of data is a subjective characteristic which is relative to the use made of the data. In CANUT it is synonomous with the accuracy of the measurement.

The quality of the data is indication of how close the reported data value is to the "true" data value. Accuracy is usually expressed as an error range (plus/minus) relative to the reported data value. This error range (or uncertainty) has two main components - sample related errors and measurement related errors.

Measurement errors include the error associated with the measurement method (the analytical precision or sensitivity) and with the laboratory procedures (e.g. duplicate analyses, replicated samples). Any good laboratory will know these errors for all its measurement methods.

Sample errors define how "representative" the sample is of the population being sampled. They involve the experimental sampling design, the care taken in sampling, and preservation methods. Sample errors are more difficult to determine and can be very much larger than the measurement errors.

CANUT is intended to record the known measurement error as a percentage of the reported data value. Sampling errors, if known, can be indicated in the sample description.

CANUT does not consider the error when accepting data. The system accepts all measurement values, whether they are possible nor not. (For example, negative PH values would be accepted).

2.5 Tombstone and Bibliographic Data

Data related to the tailings site will be included and assessed separately from the study data. These data are intended to provide pointers or indexes to the details of operations and engineering to indicate what data are available and where they can be accessed. The operating companies will be responsible for verifying its accuracy.

Similarly the bibliographic data is intended to allow the inclusion of pointers to others sources of information of a more general nature about the mine, tailings site and mill. No standards are established for bibliographic data.

3. CODING STANDARDS

The primary reasons for coding data in CANUT are to facilitate consistent recording of information, to simplify data entry and retrieval specifications, and to reduce errors by system users.

This section describes the codes which are used in the CANUT database. Environment Canada's NAQUADAT coding was used as the basis for CANUT. However, CANUT contains a broader spectrum of sample types and measurement methods than does NAQUADAT, so the code structures are expanding beyond the initial basis.

There is no intention of excluding any relevant kind of study or data, and anything in this document which appears to do so should be brought to the attention of the Data Administrator.

Only 3 components in the CANUT database, require special coding structures. These are:

C705 - Sample Type
C713 - Sample Treatment
C1001 - Measurement Type

3.1 Sample Type (C705)

The CANUT sample type code was designed to provide an hierarchical structure with 4 levels of detail. This structure will permit up to 10,000 sample types to be specified and allow retrievals at each level of detail.

The major categories are as follows:

0000 (unassigned)
1000 water
2000 air
3000 soil
4000 rock
5000 tailings (fill, slurry)
6000 vegetation
7000 animals
8000 (unassigned)
9000 (unassigned)

The lower level categories are described in the data dictionary.

3.2 Sample Treatment (C713)

The sample treatment code allows for more than 45,000 variations. At the present time only the basic treatments are defined. These are:

A. ashed
B. ash-free
C. frozen
D. dried
E. filtered
F. acidified
G. extracted
H. preserved other ways
I. not treated

These can be combined where more than one treatment is used, but each combination must be entered into the master list.

A blank in this field indicates that the treatement is not stated.

3.3 Measurement Type (C1001)

The measurement code indicates the type of analysis or observation and gives an indication of where the measurement was made.

The measurement code consists of 2 parts:

Specific Test Indentifier. This identifies each individual type of test as defined in a master list of analytical techniques and procedures. Initially this master list will consist of the NAQUADAT "Dictionary of Parameter Codes".

Measurement Location Indicator. A prefix to the test identifier will indicate where the measurement was performed.

0 - field
1 - laboratory
2 - in situ

4. PROCEDURAL STANDARDS

To maintain continuity of the database, established administrative procedures are necessary to modify both the data and the database structure.

Changes and additions to the data in CANUT wil be submitted through the Data Administrator who will be responsible for inputting the data and notifying users of the actions.

A proposed change to the standards or the database structure must be approved by the Data Administrator. Approved changes will then be implemented by CANMET in the CANUT database, and updates to the documentation will be distributed to known users. It is essential that all code and data changes follow this procedure to prevent an uncontrolled proliferation of non-exclusive and redundant codes or inconsistent data.

APPENDIX A

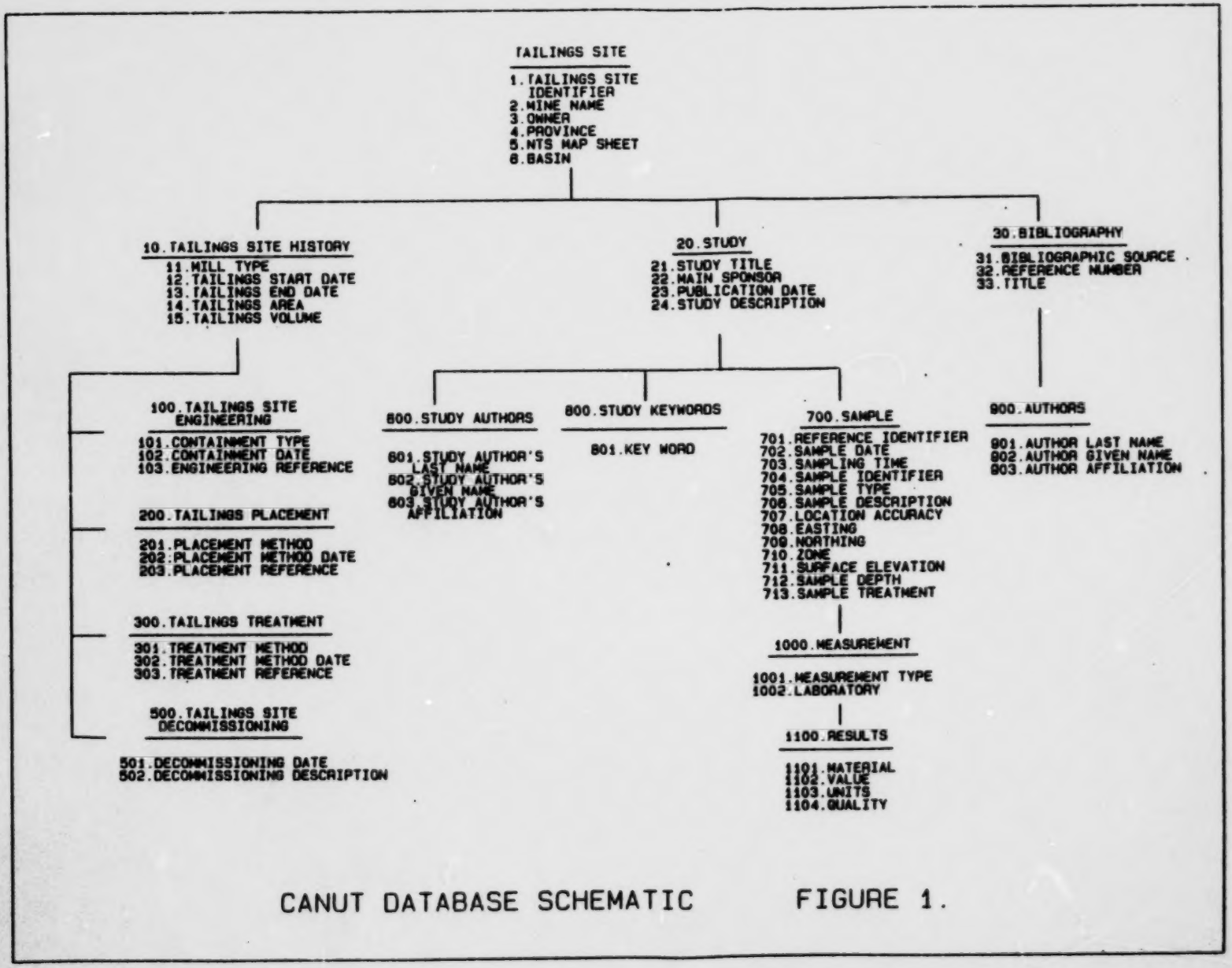
DATA DICTIONARY

Data Dictionary

The data dictionary contains the data base definition in S2K format, the data element definitions and tentative code lists and code structures. Figure 1 shows the database definition schematically.

Repeating groups are indicated by the word "RECORD" in the database definition. A repeating group is a set of data elements occuring together which can have multiple values. For example, a study may have multiple samples. Information at the sample level is in the sample repeating group. There can be several kinds of repeating groups at the same level, and repeating groups can themselves have repeating groups. Besides indicating a hierarchical relationship, a repeating group structure can be used where there is only one repeating data element but the size of the element is unknown. This is particularly useful for narrative descriptions to avoid reserving a lot of unused space.

Note that with this design the types of analysis would only be found in two places; embedded in the study description and in each of the measurement codes. If it is found that there is a commonly occurring need to retrieve studies which have particular kinds of analyses then it may be more efficient to summarize the analysis types at the study level as an explicit data element or elements.



CANUT DATABASE SCHEMATIC FIGURE 1.

CANUT Data Base Definition

```
0*   TAILINGS SITE (RECORD)%
     1*   TAILINGS SITE IDENTIFIER (CHAR X(12))%
     2*   MINE NAME (CHAR X(10))%
     3*   OWNER (CHAR X(13))%
     4*   PROVINCE (CHAR XX)%
     5*   NTS MAP SHEET (CHAR X(6))%
     6*   BASIN CODE (CHAR XXXX)%

     10*  TAILINGS SITE HISTORY (RECORD)%
          11*  MILL TYPE (CHAR X IN 10)%
          12*  TAILINGS START DATE (DATE IN 10)%
          13*  TAILINGS END DATE (DATE IN 10)%
          14*  TAILINGS AREA (NON-KEY DECIMAL NUMBER 999.99 IN
               10)%
          15*  TAILINGS VOLUME (NON-KEY DECIMAL NUMBER 9(5).9
               IN 10)%
          100* TAILINGS SITE ENGINEERING (RECORD IN 10)%
               101*  CONTAINMENT TYPE (CHAR XXX IN 100)%
               102*  CONTAINMENT DATE (DATE IN 100)%
               103*  ENGINEERING REFERENCE (CHAR X(40) IN 100)%
          200* TAILINGS PLACEMENT (RECORD IN 10)%
               201*  PLACEMENT METHOD (INTEGER NUMBER 99 IN
                     200)%
               202*  PLACEMENT METHOD DATE (DATE IN 200)%
               203*  PLACEMENT REFERENCE (CHAR X(40) IN 200)%
          300* TAILINGS TREATMENT (RECORD IN 10)%
               301*  TREATMENT METHOD (INTEGER NUMBER 99 IN
                     300)%
               302*  TREATMENT METHOD DATE (DATE IN 300)%
               303*  TREATMENT REFERENCE (CHAR X(40) IN 300)%
          500* TAILINGS SITE DECOMMISSIONING (RECORD IN 10)%
               501*  DECOMMISSIONING DATE (DATE IN 500)%
               502*  DECOMMISSIONING DESCRIPTION (NON-KEY CHAR
                     X(70) IN 500)%
```

```
20*  STUDY (RECORD)%
     21*   STUDY TITLE (CHAR X(240) IN 20)%
     22*   MAIN SPONSOR (CHAR X(25) IN 20)%
     23*   PUBLICATION DATE (INTEGER NUMBER 9999 IN 20)%
     24*   STUDY DESCRIPTION (NON-KEY CHAR X(35) IN 20)%
     600*  STUDY AUTHORS (RECORD IN 20)%
           601*   STUDY AUTHOR LAST NAME (CHAR X(20) IN
                  600)%
           602*   STUDY AUTHOR GIVEN NAME (CHAR X(20) IN
                  600)%
           603*   STUDY AUTHOR'S AFFILIATION (CHAR X(40)
                  IN 600)%
     700*  SAMPLE (RECORD IN 20)%
           701*   REFERENCE IDENTIFIER (CHAR X(12) IN 700)%
           702*   SAMPLE DATE (DATE IN 700)%
           703*   SAMPLING TIME (INTEGER NUMBER 9(6) IN
                  700))%
           704*   SAMPLE IDENTIFIER (NON-KEY CHAR X(7) IN
                  700)%
           705*   SAMPLE TYPE (INTEGER NUMBER 9999 IN 700)%
           706*   SAMPLE DESCRIPTION (NON-KEY CHAR X(35)
                  IN 700)%
           707*   LOCATION ACCURACY (NON-KEY DECIMAL
                  NUMBER 9999.9 IN 700)%
           708*   EASTING (DECIMAL NUMBER 9(7).9 IN 700)%
           709*   NORTHING (DECIMAL NUMBER 9(8).9 IN 700)%
           710*   ZONE (INTEGER NUMBER 99 IN 700)%
           711*   SURFACE ELEVATION (DECIMAL NUMBER
                  9(5).99 IN 700)%
           712*   SAMPLE DEPTH (DECIMAL NUMBER 9(5).99 IN
                  700)%
           713*   SAMPLE TREATMENT (CHAR XXX IN 700)%
     1000* MEASUREMENT (RECORD IN 700)%
           1001*  MEASUREMENT TYPE (CHAR X(6) IN 1000)%
           1002*  LABORATORY IDENTIFIER (CHAR XXX IN 1000)%
     1100* RESULTS (RECORD IN 1000)%
           1101*  MATERIAL (CHAR X(20) IN 1100)%
           1102*  VALUE (NON-KEY REAL NUMBER IN 1100)%
```

```
          1103* UNITS (NON-KEY INTEGER NUMBER 99 IN 1100)%
          1104* QUALITY (NON-KEY DECIMAL NUMBER 99.9 IN
                1100)%
     800* STUDY KEYWORDS (RECORD IN 20)%
          801*  KEY WORD (CHAR X(20) IN 800)%
30*  BIBLIOGRAPHY (RECORD)%
     31*  BIBLIOGRAPHIC SOURCE (CHAR X(10) IN 30)%
     32*  REFERENCE NUMBER (CHAR X(10) IN 30)%
     33*  TITLE (CHAR X(40) IN 30)%
900* AUTHORS (RECORD IN 30)%
     901* AUTHOR LAST NAME (CHAR X(20) IN 900)%
     902* AUTHOR GIVEN NAME (CHAR X(20) IN 900)%
     903* AUTHOR AFFILIATION (CHAR X(40) IN 900)%
```

DATA DICTIONARY PAGE:

DATA GROUP: TAILINGS SITE NUMBER: 0

ALIAS:

DESCRIPTION: A group containing information on the tailings site.

CONTAINED IN:

CONTAINS SUBGROUPS:
- TAILINGS SITE HISTORY
- STUDY
- BIBILOGRAPHY

CONTAINS ELEMENTS:
- TAILINGS SITE IDENTIFIER
- MINE NAME
- OWNER
- PROVINCE
- NTS MAP SHEET
- BASIN

DATA DICTIONARY PAGE:

DATA ELEMENT: TAILINGS SITE IDENTIFIER NUMBER: 1

ALIAS:

DATA GROUPS:

DATA ELEMENT DESCRIPTION: The descriptive name for the particular tailing containment facility from which the sample was taken.

UNITS:

RANGE OF VALUES:

FORMAT: X(12)

EDIT RULES: Alphanumeric.

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: MINE NAME NUMBER: 2

ALIAS:

DATA GROUPS:

DATA ELEMENT DESCRIPTION: The name of the mine producing the tailings

UNITS:

RANGE OF VALUES:

VALUE	MEANING
Amok	Amok Saskatchewan
Bicroft	Bicroft Bancroft, Ontario
Denison	Denison Elliot Lake, Ontario
Dyno	Dyno Bancroft, Ontario
Eldorado-S	Eldorado Beaverlodge, Sask.
Eldorado-N	Eldorado Port Radium, NWT
Collins Bay	Eldorado Collins Bay, Sask.
Rabbit L.	Eldorado Rabbit Lake, Sask.
Gunnar	Gunnar Crackingston Point, Sask.
Key Lake	Key Lake Key Lake, Sask.
Lacnor	Lacnor Elliot Lake, Ontario
Lorado	Lorado Uranium City, Sask.

VALUE	MEANING
Faraday	Madawaska Bancroft, Ontario
Mill-Stan	Milliken-Stanleigh Elliot Lake, Ontario
Nordic	Nordic Elliot Lake, Ontario
Olive Lake	
Pronto	Pronto Blind River, Ontario
Panel	Rio Algom - Panel Elliot Lake, Ontario
Quirke	Rio Algom - Quirke ie 2 Elliot Lake, Ontario
Span-Amer	Spanish American Elliott Lake, Ontario
Stan/Can	Stanrock & Canmet Elliott Lake, Ontario
Stanleigh	Stanleigh Elliot Lake, Ontario

FORMAT: X(10)

EDIT RULES: Alphabetic, must match master list.

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: OWNER NUMBER: 3

ALIAS:

DATA GROUPS:

DATA ELEMENT DESCRIPTION: The company which owns the mine.

UNITS:

RANGE OF VALUES: Amok, Cluff Mining, Can-Mines, Denison, Eldorado, Gulf Minerals, Gunnar, Key Lake, Lacnor, Lorado, Macnamara, Madawaska, Pronto, Rio Algom

FORMAT: X(13)

EDIT RULES: Alphabetic

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: PROVINCE NUMBER: 4

ALIAS:

DATA GROUPS:

DATA ELEMENT DESCRIPTION: The province or territory the mine site is located in.

UNITS:

RANGE OF VALUES: AL-Alberta, BC-British Columbia, MA-Manitoba, NB-New Brunswick, NF-Newfoundland, NW-Northwest Territories, NS-Nova Scotia, ON-Ontario, PE-Prince Edward Island, QU-Quebec, SA-Saskatchewan, YT-Yukon Territory.

FORMAT: XX

EDIT RULES: Alphabetic, must match master list.

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: NTS MAP SHEET NUMBER: 5

ALIAS:

DATA GROUPS:

DATA ELEMENT
DESCRIPTION: Identification of the National Topographic System map sheet that the tailings site is located on.

UNITS:

RANGE OF VALUES:

FORMAT: X(6)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: BASIN CODE NUMBER: 6

ALIAS: DRAINAGE BASIN, SUB-BASIN

DATA GROUPS:

DATA ELEMENT DESCRIPTION: The Water Survey of Canada basin and sub-basin codes which identify the drainage basins in Canada.

UNITS: N/A

RANGE OF VALUES: 02CD - Elliot Lake/Serpent River
02HF, 02HK, 02KD - Bancroft area
07MC - Uranium City
07LC - Collins Bay area

FORMAT: XXXX

EDIT RULES: First two characters are numeric. Last two characters are alphabetic.

SOURCE: Water Survey of Canada.

DATA GROUP: TAILINGS SITE HISTORY NUMBER: 10

ALIAS:

DATA GROUP DESCRIPTION: A repeating group containing information on the operating history of each tailings site.

CONTAINED IN:

CONTAINS SUBGROUPS:
TAILINGS PLACEMENT
TAILINGS TREATMENT
TAILINGS MINERALOGY
TAILINGS DECOMMISSIONING

CONTAINS ELEMENTS:
MILL TYPE
TAILINGS START DATE
TAILINGS END DATE
TAILINGS AREA
TAILINGS VOLUME

DATA DICTIONARY PAGE:

DATA ELEMENT: MILL TYPE NUMBER: 11

ALIAS:

DATA GROUPS:

DATA ELEMENT DESCRIPTION: A code indicating the type of mill process used for uranium extraction.

UNITS:

RANGE OF VALUES: A - acid, B - alkali

FORMAT: X

EDIT RULES: Alphabetic, either A or B

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: TAILINGS START DATE NUMBER: 12

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY

DATA ELEMENT DESCRIPTION: The date on which the tailings containment facility was opened.

UNITS:

RANGE OF VALUES: YYMMDD 330101 to present date

FORMAT: 9(6) (YYMMDD)

EDIT RULES: DD(01-31), MM (01-12), YY (00-99)
Greater than 330101

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: TAILINGS END DATE NUMBER: 13

ALIAS:

DATA GROUPS: TAILING SITE HISTORY

DATA ELEMENT DESCRIPTION: The date on which the tailings containment facility was closed.

UNITS:

RANGE OF VALUES: Tailings Start Date to present date

FORMAT: 9(6) (YYMMDD)

EDIT RULES: Greater than start date
DD (01-31), MM (01-12), YY (00-99)

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: TAILINGS AREA NUMBER: 14

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY

DATA ELEMENT
DESCRIPTION: The total surface area of the tailings at the tailings site.

UNITS: hectares (ha)

RANGE OF VALUES: 000.00 - 999.99

FORMAT: 999.99

EDIT RULES: Numeric, positive

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: TAILINGS VOLUME NUMBER: 15

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY

DATA ELEMENT DESCRIPTION: The total volume of tailings in the containment facility.

UNITS: cubic metres

RANGE OF VALUES: 00000.0 - 99999.9

FORMAT: 9(5).9

EDIT RULES: Numeric, positive

SOURCE:

DATA GROUP: STUDY NUMBER: 20

ALIAS:

DATA GROUP DESCRIPTION: A repeating group containing information specific to a given study.

CONTAINED IN:

CONTAINS SUBGROUPS:
STUDY AUTHORS
STUDY SAMPLE
STUDY KEY WORDS

CONTAINS ELEMENTS:
STUDY TITLE
MAIN SPONSOR
PUBLICATION DATE
STUDY DESCRIPTION

DATA DICTIONARY PAGE:

DATA ELEMENT: STUDY TITLE NUMBER: 21

ALIAS:

DATA GROUPS: STUDY

DATA ELEMENT DESCRIPTION: This element contains the title or name of the study.

UNITS:

RANGE OF VALUES:

FORMAT: X(240)

EDIT RULES: Alphanumeric

SOURCE:

DATA ELEMENT: MAIN SPONSOR NUMBER: 22

ALIAS:

DATA GROUPS: STUDY

DATA ELEMENT DESCRIPTION: This element contains the name or other identification of the main sponsor of the study.

UNITS:

RANGE OF VALUES:

FORMAT: X(25)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: PUBLICATION DATE NUMBER: 23

ALIAS:

DATA GROUPS: STUDY

DATA ELEMENT DESCRIPTION: The year in which the study was published or released.

UNITS:

RANGE OF VALUES: Less than or equal to present year

FORMAT: 9999

EDIT RULES: Numeric, positive

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: STUDY DESCRIPTION NUMBER: 24

ALIAS:

DATA GROUPS: STUDY

DATA ELEMENT DESCRIPTION: A narrative description of the study including methodology, purpose, types of samples and types of analyses.

UNITS:

RANGE OF VALUES:

FORMAT: X(35)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA GROUP: BIBLIOGRAPHY NUMBER: 30

ALIAS:

DATA GROUP DESCRIPTION: A repeating group indicating another bibliographic index or source of other studies related to the mine.

CONTAINED IN:

CONTAINS SUBGROUPS: AUTHORS

CONTAINS ELEMENTS: BIBLIOGRAPHIC SOURCE
REFERENCE NUMBER
TITLE

DATA DICTIONARY PAGE:

DATA ELEMENT: BIBLIOGRAPHIC SOURCE NUMBER: 31

ALIAS:

DATA GROUPS: BIBLIOGRAPHY

DATA ELEMENT
DESCRIPTION: The name of the bibliographic index system containing a reference to the study.

UNITS:

RANGE OF VALUES:

FORMAT: X(10)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: REFERENCE NUMBER NUMBER: 32

ALIAS:

DATA GROUPS: BIBLIOGRAPHY

DATA ELEMENT
DESCRIPTION: The reference number in the bibliographic source.

UNITS:

RANGE OF VALUES:

FORMAT: X(10)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: TITLE NUMBER: 33

ALIAS:

DATA GROUPS: BIBLIOGRAPHY

DATA ELEMENT
DESCRIPTION: The title of the related study from the bibliographic source

UNITS:

RANGE OF VALUES:

FORMAT: X(40)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA GROUP: TAILINGS SITE ENGINEERING NUMBER: 100

ALIAS:

DATA GROUP DESCRIPTION: A repeating group describing the general type of containment facility and changes over time.

CONTAINED IN: TAILINGS SITE HISTORY

CONTAINS SUBGROUPS:

CONTAINS ELEMENTS:

CONTAINMENT TYPE
CONTAINMENT DATE
ENGINEERING REFERENCE

DATA DICTIONARY PAGE:

DATA ELEMENT: CONTAINMENT TYPE NUMBER: 101

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS SITE ENGINEERING

DATA ELEMENT
DESCRIPTION: A code indicating the general type of containment facility for the tailings.

UNITS:

RANGE OF VALUES:

A -valley dam	A- geological	A- soil
B -ring dyke	B- clay	B- clay
C -open pit	C- synthetic	C- water
D -underground mine	D- compacted soil	D - synthetic
E -deep lake disposal		

FORMAT: XXX (General type, liner option, cover option)

EDIT RULES: Alphabetic

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: CONTAINMENT DATE NUMBER: 102

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS SITE ENGINEERING

DATA ELEMENT DESCRIPTION: The date on which the containment type was installed.

UNITS:

RANGE OF VALUES: YYMMDD greater than 330101 and less than present date

FORMAT: 9(6) YYMMDD

EDIT RULES: YY (00-99) MM (01-12), DD (01-31)
Greater than 330101 and less than present date

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: ENGINEERING REFERENCE NUMBER: 103

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS SITE ENGINEERING

DATA ELEMENT DESCRIPTION: A reference to the source for details concerning the containment facility

UNITS:

RANGE OF VALUES:

FORMAT: X(40)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA GROUP: TAILINGS PLACEMENT NUMBER: 200

ALIAS:

DATA GROUP DESCRIPTION: A repeating group describing the history of the methods by which the tailings were deposited.

CONTAINED IN: TAILINGS SITE HISTORY

CONTAINS SUBGROUPS:

CONTAINS ELEMENTS:

PLACEMENT METHOD
PLACEMENT METHOD DATE
PLACEMENT REFERENCE

DATA DICTIONARY PAGE:

DATA ELEMENT: PLACEMENT METHOD NUMBER: 201

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS PLACEMENT

DATA ELEMENT DESCRIPTION: Code defining the method by which the tailings were deposited.

UNITS:

RANGE OF VALUES:

1. Poured
2. Layered
3. Coning
4. De-watered
5. Under water

FORMAT: 99

EDIT RULES: Numeric, must be on list of codes

SOURCE:

DATA ELEMENT: PLACEMENT METHOD DATE NUMBER: 202

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS PLACEMENT

DATA ELEMENT DESCRIPTION: The date that placement method was adopted

UNITS:

RANGE OF VALUES: YYMMDD

FORMAT: 9(6)

EDITS RULES: YY (33-99), MM (01-12) DD (01-31)
Greater than or equal to Tailings Start Date
Less than or equal to Tailings End Date
Less than or equal to present date

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: PLACEMENT REFERENCE NUMBER 203

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS PLACEMENT

DATA ELEMENT DESCRIPTION: Reference to source where description or information on the placement method can be obtained.

UNITS:

RANGE OF VALUES:

FORMAT: X(40)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA GROUP: TAILINGS TREATMENT NUMBER: 300

ALIAS:

DATA GROUP DESCRIPTION: A repeating group describing the history of the methods by which the tailings were treated.

CONTAINED IN: TAILINGS SITE HISTORY

CONTAINS SUBGROUPS:

CONTAINS ELEMENTS:

TREATMENT METHOD
TREATMENT METHOD DATE
TREATMENT REFERENCE

DATA DICTIONARY PAGE:

DATA ELEMENT: TREATMENT METHOD NUMBER: 301

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS TREATMENT

DATA ELEMENT DESCRIPTION: Code defining the method by which the tailings were treated.

UNITS:

RANGE OF VALUES:

1. Neutralization
2. Sand/slime
3. Barium Chloride
4. Depyritizing

FORMAT: 99

EDIT RULES: Numeric, must be on list of codes

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: TREATMENT METHOD DATE NUMBER: 302

ALIAIS:

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS TREATMENT

DATA ELEMENT DESCRIPTION: The date that the treatement method was adopted

UNITS:

RANGE OF VALUES: YYMMDD greater than 330101 and less than present date

FORMAT: 9(6)

EDIT RULES: YY (33-99) MM (01-12) éDD (01-31)
Greater than or equal to tailings start date.
Less than or equal to present date.

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: TREATMENT REFERENCE NUMBER: 303

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS TREATMENT

DATA ELEMENT
DESCRIPTION: Reference to source where description or information on the treatement method can be obtained.

UNITS:

RANGE OF VALUES:

FORMAT: X(4)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA GROUP: TAILINGS SITE DECOMMISSIONING NUMBER: 500

ALIAS:

DATA GROUP DESCRIPTION: A group containing data on the decommissioning of the tailings site

CONTAINED IN: TAILINGS SITE HISTORY

CONTAINS SUBGROUPS:

CONTAINS ELEMENTS: DECOMMISSIONING DATE
DECOMMISSIONING DESCRIPTION

DATA DICTIONARY PAGE:

DATA ELEMENT: DECOMMISSIONING DATE NUMBER: 501

ALIAS

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS SITE DECOMMISSIONING

DATA ELEMENT DESCRIPTION: The date on which the tailings site was officially decommissioned.

UNITS:

RANGE OF VALUES: YYMMDD greater than Tailings End Date

FORMAT: 9(6)

EDIT RULES: YY (33-99), MM(01-12), DD (01-31)
Greater than or equal to Tailings End Date

SOURCE:

DATA ELEMENT: DECOMMISSIONING DESCRIPTION NUMBER: 502

ALIAS:

DATA GROUPS: TAILINGS SITE HISTORY.TAILINGS SITE DECOMMISSIONING

DATA ELEMENT DESCRIPTION: An element which summarizes the actions of decommissioning the tailings site.

UNITS:

RANGE OF VALUES:

FORMAT: X(70)

EDIT RULES: Alphanumeric

SOURCE:

DATA GROUP: STUDY AUTHORS NUMBER: 600

ALIAS:

DATA GROUP DESCRIPTION: A repeating group which identifies the authors of the study.

CONTAINED IN: STUDY

CONTAINS SUBGROUPS:

CONTAINS ELEMENTS:
STUDY AUTHOR LAST NAME
STUDY AUTHOR GIVEN NAME
STUDY AUTHOR'S AFFILIATION

DATA ELEMENT: STUDY AUTHOR LAST NAME NUMBER: 601

ALIAS

DATA GROUPS: STUDY.STUDY AUTHORS

DATA ELEMENT DESCRIPTION: The last name of each author of the study.

UNITS:

RANGE OF VALUES:

FORMAT: X(20)

EDIT RULES: Alphabetic

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: STUDY AUTHOR GIVEN NAME NUMBER: 602

ALIAS:

DATA GROUPS: STUDY.STUDY AUTHORS

DATA ELEMENT
DESCRIPTION: The given names or initials of the study author

UNITS:

RANGE OF VALUES:

FORMAT: X(20)

EDIT RULES: Alphabetic

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: STUDY AUTHOR'S AFFILIATION NUMBER: 603

ALIAS:

DATA GROUPS: STUDY.STUDY AUTHORS

DATA ELEMENT DESCRIPTION: The name of the organization that the author was affiliated with at the time of the study

UNITS:

RANGE OF VALUES:

FORMAT: X(20)

EDIT RULES: Alphabetic

SOURCE:

DATA DICTIONARY PAGE:

DATA GROUP: SAMPLE NUMBER: 700

ALIAS:

DATA GROUP DESCRIPTION: A repeating group containing information about the sample.

CONTAINED IN: STUDY

CONTAINS SUBGROUPS: MEASUREMENT

CONTAINS ELEMENTS:

REFERENCE IDENTIFIER
SAMPLE DATE
SAMPLING TIME
SAMPLE TYPE
SAMPLE IDENTIFIER
SAMPLE DESCRIPTION
LOCATION ACCURACY
EASTING
NORTHING
ZONE
SURFACE ELEVATION
SAMPLE DEPTH
SAMPLE TREATMENT

DATA DICTIONARY PAGE:

DATA ELEMENT: REFERENCE IDENTIFIER NUMBER: 701

ALIAS: STATION IDENTIFIER

DATA GROUPS: STUDY SAMPLE

DATA ELEMENT DESCRIPTION: The original "field" or "laboratory" identifier for the particular sampling station which distinguishes it from others. This is the identifier applied by the source of the data.

UNITS:

RANGE OF VALUES:

FORMAT: X(12)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: SAMPLE DATE NUMBER: 702

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT
DESCRIPTION: The date on which the sample was taken.

UNITS:

RANGE OF VALUES: YYMMDD greater than 330101

FORMAT: 9(6)

EDIT RULES: MM(01-12), DD(01-31), YY(00-99)
Greater than 321231

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: SAMPLING TIME NUMBER: 703

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT DESCRIPTION: The time of day when the sample was taken.

UNITS: hour, minute, second - HHMMSS

RANGE OF VALUES: 000000 - 240000

FORMAT: 9(6)

EDIT RULES: HH(00 - 24), MM(00 - 60), SS(00 - 60)

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: SAMPLE IDENTIFIER NUMBER: 704

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT
DESCRIPTION: A unique field or laboratory sample identifier.

UNITS:

RANGE OF VALUES:

FORMAT: X(7)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: SAMPLE TYPE NUMBER: 705

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT
DESCRIPTION: A code indicating the type of sample material.

UNITS:

RANGE OF VALUES: 0000-9999

FORMAT: 9999

EDIT RULES: Numeric, positive

SOURCE:

SAMPLE TYPE CODES

1000	water	
	1100	surface water
	1200	ground water
	1300	experimental water
	1400	tailings water
	1500	extracted water
2000	air	
	2100	gas
	2200	participate
	2300	precipitation
3000	soil	
	3100	bare soil
	3200	vegetation associated/covered
	3300	water covered
	3400	tailings covered
	3500	sediment
4000	rock	
	4100	grab sample
	4200	mill feed/ore
	4300	dam fill
	4400	drill core
	4500	waste rock
5000	tailings	
	5100	bare tailings
	5200	vegetation associated/covered
	5300	water covered
	5400	soil covered
6000	vegetation	
	6100	monocots
	6200	dicots
	6300	ferns
	6400	fungi
	6500	bacteria
	6600	algae
	6700	bryophytes
7000	animals	
	7100	fish
	7200	other aquatic animals
	7300	rodents
	7400	unqulates
	7500	predators
	7600	water birds
	7700	predatory birds
	7800	other birds
8000	phytotoxicology (misc.)	
	8020	not applicable

1100 surface water
- 1110 lake
- 1120 pond
- 1130 river
- 1140 stream
- 1150 swamp/bog/marsh
- 1160 mine waste water
- 1170 tailings effluent
- 1180 domestic/industrial waste water
- 1190 snow/ice

1200 ground water
- 1210 mine seepage
- 1220 piezometer well
- 1240 well
- 1250 spring

1400 tailings water
- 1410 tailings pond water
- 1420 tailings pond seepage

3200 vegetation associated/covered
- 3210 with cattails
- 3220 with trembling aspen
- 3230 with sedges
- 3240 with white birch
- 3250 with moss
- 3260 with algae
- 3270 with grasses

5200 vegetation associated/covered
- 5210 with cattails
- 5220 with trembling aspen
- 5230 with sedges
- 5240 with white birch
- 5250 with moss
- 5260 with algae
- 5270 with grasses

6100 monocots
- 6110 cattails
  - 6111 stem/branch
  - 6112 seed/fruit
  - 6113 leaf
  - 6114 root
  - 6115 rhizome
- 6120 sedges*

6200 dicots
- 6210 white birch*
- 6220 trembling aspen*

6700 bryophytes
- 6710 mosses*

7100 fish
- 7110 pickerel
  - 7111 whole
  - 7112 skin
  - 7113 flesh
  - 7114 liver
  - 7115 gonads
  - 7116 stomach
  - 7117 brain
  - 7118 heart
  - 7119 bone
- 7120 perch*
- 7130 trout*
- 7140 sunfish*
- 7150 bass*
- 7160 pike*
- 7170 muskelunge*

7200 other aquatic animals
- 7210 snails*
- 7220 leeches *
- 7230 clams *
- 7240 crustaceans*
- 7250 frogs*

7300 rodents
- 7310 beaver
- 7320 muskrat
- 7330 mice

7400 ungulates
- 7410 deer
- 7420 moose
- 7430 caribou

7500 predators
- 7510 bear
- 7520 lnyx
- 7530 wolf
- 7540 fox
- 7550 wolverine
- 7560 weasel
- 7570 marten
- 7580 skunk

* subcategories for other species in this group are not included for reasons of space.

DATA DICTIONARY PAGE:

DATA ELEMENT: SAMPLE DESCRIPTION NUMBER: 706

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT
DESCRIPTION: A brief description of the sample material

UNITS:

RANGE OF VALUES:

FORMAT: X(35)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: LOCATION ACCURACY NUMBER: 707

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT
DESCRIPTION: The accuracy to which the sample location is known.

UNITS: metres

RANGE OF VALUES: .1 to 9999.9

FORMAT: 9999.9

EDIT RULES: Numeric, positive

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: EASTING NUMBER: 708

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT
DESCRIPTION: The UTM easting coordinate of the sample location

UNITS: metres

RANGE OF VALUES: 000000.0-500000.0

FORMAT: 9(7).9

EDIT RULES: Numeric, positive

SOURCE:

NOTE: Latitude and longitude must be converted to UTM coordinates when entered into the CANUT database.

DATA DICTIONARY PAGE:

DATA ELEMENT: NORTHING NUMBER: 709

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT
DESCRIPTION: The UTM northing coordinate of the sample location

UNITS: metres

RANGE OF VALUES: 4470000.0-99999999.9

FORMAT: 9(8).9

EDIT RULES: Numeric, positive, greater than 4470000

SOURCE:

NOTE: Latitude and longitude must be converted to UTM coordinates when entered into the CANUT database.

DATA DICTIONARY PAGE:

DATA ELEMENT: ZONE NUMBER: 710

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT
DESCRIPTION: The UTM zone coordinate of the sample location.

UNITS:

RANGE OF VALUES: 05-21

FORMAT: 99

EDIT RULES: Numeric, positive

SOURCE:

NOTE: Latitude and longitude must be converted to UTM coordinates when entered into the CANUT database.

DATA DICTIONARY PAGE:

DATA ELEMENT: SURFACE ELEVATION NUMBER: 711

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT DESCRIPTION: Height above mean sea level of the station at which the sample was taken.

UNITS: metres

RANGE OF VALUES 0.00-5000.00

FORMAT: 9(5).99

EDIT RULES: Numeric, positive

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: SAMPLE DEPTH NUMBER: 712

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT
DESCRIPTION: The depth of the sample from the surface.

UNITS: metres

RANGE OF VALUES: 0000.00-9999.99

FORMAT: 9(5).99

EDIT RULES: Numeric
By convention, negative values are above the surface.

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: SAMPLE TREATMENT NUMBER: 713

ALIAS:

DATA GROUPS: STUDY.SAMPLE

DATA ELEMENT DESCRIPTION: A code identifying how the sample was prepared and handled.

UNITS:

RANGE OF VALUES:

A - ashed
B - ash-free
C - frozen
D - dried
E - filtered
F - acidified
G - extracted
H - preserved (other)
I - not treated

FORMAT: XXX

EDIT RULES: Code must be in master list

SOURCE

DATA GROUP: STUDY KEY WORDS NUMBER: 800

ALIAS:

DATA GROUP
DESCRIPTION: A group containing the key words for the study.

CONTAINED IN: STUDY

CONTAINS
SUBGROUPS:

CONTAINS
ELEMENTS: KEY WORD

DATA ELEMENT: KEY WORD NUMBER: 801

ALIAS

DATA GROUPS: STUDY.STUDY KEYWORDS

DATA ELEMENT DESCRIPTION: Key words in the study--both descriptors and content

UNITS:

RANGE OF VALUES:

FORMAT: X(20)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA GROUP: AUTHORS NUMBER:900

ALIAS:

DATA GROUP DESCRIPTION: A repeating group identifying the authors of a particular study in the bibliographic index or source.

CONTAINED IN: BIBLIOGRAPY

CONTAINS SUBGROUPS:

CONTAINS ELEMENTS:
AUTHOR LAST NAME
AUTHOR GIVEN NAME
AUTHOR AFFILIATION

DATA DICTINARY PAGE:

DATA ELEMENT: AUTHOR LAST NAME NUMBER: 901

ALIAS:

DATA GROUPS: BIBLIOGRAPHY.AUTHORS

DATA ELEMENT
DESCRIPTION: The last name of the authors of the referenced study.

UNITS:

RANGE OF
VALUES:

FORMAT: X(20)

EDIT RULES: Alphabetic

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: AUTHOR GIVEN NAME NUMBER: 902

ALIAS:

DATA GROUPS: BIBLIOGRAPHY.AUTHORS

DATA ELEMENT
DESCRIPTION: The given names or initials of the author of the referenced study.

UNITS:

RANGE OF VALUES:

FORMAT: X(20)

EDIT RULES: Alphabetic

SOURCE:

DATA ELEMENT: AUTHOR AFFILIATION NUMBER: 903

ALIAS:

DATA GROUPS: BIBLIOGRAPHY.AUTHORS

DATA ELEMENT DESCRIPTION: The name of the organization that the author was affiliated with at the time of the study.

UNITS:

RANGE OF VALUES:

FORMAT: X(40)

EDIT RULES: Alphabetic

SOURCE:

DATA GROUP: MEASUREMENT NUMBER: 1000

ALIAS:

DATA GROUPS

DESCRIPTION: A repeating group containing the measurement information for a sample;

CONTAINED IN: STUDY.SAMPLE

CONTAINS SUBGROUPS: RESULTS

CONTAINS ELEMENTS: MEASUREMENT TYPE
LABORATORY

DATA DICTIONARY PAGE:

DATA ELEMENT: MEASUREMENT TYPE NUMBER: 1001

ALIAS:

DATA GROUPS: STUDY.SAMPLE.MEASUREMENT

DATA ELEMENT DESCRIPTION: A code indicating the type of measurement, and where the measurement was made.

UNITS:

RANGE OF VALUES:

FORMAT: X(6)

EDIT RULES: Alphanumeric

SOURCE: The code will initially be based on the NAQUADAT master list of measurement methods.

MEASUREMENT CODES

Specific Test Identifier (xxxx)

Measurement Location Indicator (x)

0 Field
1 Laboratory
2 In situ

DATA DICTIONARY PAGE:

DATA ELEMENT: LABORATORY IDENTIFIER NUMBER: 1002

ALIAS:

DATA GROUPS: STUDY.SAMPLE.MEASUREMENT

DATA ELEMENT
DESCRIPTION: A code for the laboratory or agent which performed the analysis.

UNITS:

RANGE OF VALUES:

FORMAT: XXX

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: RESULTS NUMBER: 1100

ALIAS:

DATA GROUP
DESCRIPTION: A repeating group containing the results of a measurement.

CONTAINED IN: STUDY.SAMPLE.MEASUREMENT

CONTAINS
SUBGROUPS:

CONTAINS
ELEMENT: MATERIAL
VALUE
UNIT
QUALITY

DATA DICTIONARY PAGE:

DATA ELEMENT: MATERIAL NUMBER: 1101

ALIAS:

DATA GROUPS: STUDY.SAMPLE.MEASUREMENT.RESULTS

DATA ELEMENT DESCRIPTION: The material or condition being tested for.

UNITS:

RANGE OF VALUES:

FORMAT: X(20)

EDIT RULES: Alphanumeric

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: VALUE NUMBER: 1102

ALIAS:

DATA GROUPS: STUDY.SAMPLE.MEASUREMENT.RESULTS

DATA ELEMENT DESCRIPTION: The value of the measurement in the original units used by the originator of the database.

UNITS:

RANGE OF VALUES:

FORMAT:

EDIT RULES: Numeric

SOURCE:

DATA DICTIONARY PAGE:

DATA ELEMENT: UNITS NUMBER: 1103

ALIAS:

DATA GROUPS: STUDY.SAMPLE.MEASUREMENT.RESULTS

DATA ELEMENT
DESCRIPTION: The unit of the sample measurement used by the originator of the data.

UNITS:

RANGE OF VALUES:

FORMAT: 99

EDIT RULES: Numeric

SOURCE:

Unit Abbreviations and Codes

TYPE OF PARAMETER	UNIT	ABBREVIATION	CODE
Analytical results	grams/litre	G/L	01
	milligrams/litre	MG/L	02
	micrograms/litre	UG/L	03
	nanograms/litre	NG/L	04
	picograms/litre	PG/L	05
	parts per million	PPM	06*
	parts per billion	PPB	07*
	milliequivalents/litre	MEQ/L	08
	moles/litre	MOL/L	09
	millimoles/litre	MMOL/L	10
	relative units	REL. UNITS	11
	weight percent	WT.PC	85
Specific conductance	siemens/cm	SIE/CM	12
	microsiemens/cm	USIE/CM	13
Altitude, depth, location	miles	MI	16*
	yards	YD	17*
	feet	FT	18*
	inches	IN	19*
	kilometres	KM	20
	metres	M	21
	centimetres	CM	22
	millimetres	MM	73
Area	square kilometres	KM2	75
	square centimetres	CM2	76
	hectares	HA	81
	acres	ACRES	82
Flow	cubic feet/second	CFS	23*
	cubic feet/minute	CFM	24*
	cubic feet/hour	CFH	25*
	imperial gallons/second	IGPS	26*
	imperial gallons/minute	IGPM	27*
	imperial gallons/day	IGPD	28*
	gallons (US)/second	GPS	29*
	gallons (US)/minute	GPM	30*
	gallons (US)/day	GPD	31*
	cubic metres/second	M3/S	32
	litres/second	L/S	33
	cubic decimetres/second	DM3/S	80
Redox potential	millivolts	MV	38

TYPE OF PARAMETER	UNIT	ABBREVIATION	CODE
Density	grams/cubic cm	G/CM3	39
Surface tension	dynes/cm	DYN/CM	40
Threshold odour number	threshold odour number	TON	41
Turbidity	Jackson turbidity unit	JTU	42
	Formazin units	FZN UNIS	63
	foot candles	FT CANDLES	66
pH, saturation and stability indices	pH unit	PH UNITS	43
Chlorophyll	milligrams/cubic metre	MG/M3	44
Water consumption	1000 gallons/day	1000 GAL/DAY	48*
Bacteria and biology	number/decilitre	NO/DL	50
	number/millilitre	NO/ML	51
	thousand/millilitre	THOUSAND/ML	52
	number/litre	NO/L	53
	cells/millilitre	CELL/ML	54
	milligrams/litre dry wt	MG/L DRY WT	55
	milligrams of Carbon per cubic metre per hour	MGC/M3/HR	56
Sediment analysis	micrograms/gram	UG/G	45
	milligrams/kilogram	MG/KG	46
	number/cubic metre	NO/M3	47
Time	minutes	MIN	77
	days	DAY	64
	hours	HR	86
	seconds	SEC	87
Temperature	degrees Celsius	DEG.C	34
	degrees Fahrenheit	DEG.F	35*
Atmospheric pressure	inches of mercury (at 0°C)	IN HG	36*
	millimetres of mercury (at 0°C)	MM HG	37*
	kilopascals	KPA	72
Velocity	kilometre/hour	KM/HR	71

TYPE OF PARAMETER	UNIT	ABBREVIATION	CODE
Loadings	kilograms/day	KG/DAY	60
	grams/day	G/DAY	61
	tonnes/day	T/DAY	62
	litre/hectare/day	L/HA/DAY	67*
	gram/hectare/day	G/HA/DAY	68*
Radioactivity	picocurie/litre	PCI/L	70*
	becquerel/litre	BQ/L	79
	becquerel/gram	BQ/G	83
	becquerel/cubic metre	BQ/M3	84
	picocurie/gram	PCI/G	86
Miscellaneous	percent	%	15
	count (number)	NO	14
	alphabetic code	DESCRIPTIVE CODE	74

* use of these units is discouraged.

DATA DICTIONARY PAGE:

DATA ELEMENT: QUALITY NUMBER: 1104

ALIAS:

DATA GROUPS: STUDY.SAMPLE.MEASUREMENT.RESULTS

DATA ELEMENT DESCRIPTION: A value indicating the quality of the reported value. The value will vary with laboratory, analytical method and sample type.

UNITS: percent

RANGE OF VALUES: .1 - 99.9

FORMAT: 99.9

EDIT RULES: Numeric, positive

SOURCE:

Number/
Numéro

2

REQ. NO. 2-9143

CONTRACT REPORT NO. OSQ82-00132

CANUT
USER'S MANUAL

NOV 8 1983

MICROMEDIA

32pp

CANMET
Ottawa, Canada, 1983

TABLE OF CONTENTS

INTRODUCTION
- The System
- The Manual

DEFINITION AND STRUCTURE
- Hierarchical Structure
- Key Items
- Abbreviations
- Symbols

GETTING STARTED
- Account Number and Password
- Terminals
- Access by DATAPAC
- LOGIN Procedure and the EMR Computer
- Accessing System 2000

DATA RETRIEVAL
- WHERE Clause
- TALLY Command
- PRINT Command
- PRINT COUNT Command
- LIST Command
- LIST COUNT Command
- PRESET Commands

BATCH JOBS

DATA UPDATING
- DESCRIBE Command

HOW TO STOP

INTRODUCTION

The System

CANUT is the acronym given to the prototype data base for samples related to Canadian Uranium Tailings. It was designed in 1982 to meet three objectives:

. store key data related to uranium tailings from many studies.

. provide a system to retrieve selected data.

. help users define data requirements for a permanent system.

The prototype operates on EMR's Control Data computer, a CYBER 74, using the System 2000 data base management system. Access to CANUT and assistance in using it can be obtained from the National Uranium Tailings Program (NUTP) Data Administrator. He may be contacted through Dr. V. Haw, 613-995-4183.

The data in the prototype have been contributed by Environment Canada, AECB (IES), Rio Algom Mines and the Ontario Ministry of the Environment. Other sources have been contacted and their data can be included as it is made available.

The prototype is not intended to be the final system. However, it is designed to be flexible and capable of growing as more requirements are imposed on it. You, the user, should tell the Data Administrator when the system doesn't meet your needs and suggest improvements you would like.

The Manual

This User Manual provides the basic information required to access CANUT from a remote terminal describes key features of the system and defines special terms and symbols.

Section 3 tells how to get started using the system. Section 4 describes how to make specific requests and perform specific actions. The instructions enable the users to retrieve and manipulate all of the data elements.

The system was designed for use at a computer terminal. However, if there is a lot of output, or you have a large number of requests to make during periods when the computer system is very busy, you might not want to wait for your answer. Section 5 describes how to have the job run without your having to wait at the terminal.

Section 6 would describe how to edit and update the data. However, while CANUT is in the prototype stage this function should be done by or with the approval of the NUTP Data Administrator. Therefore, this section has not been included.

Finally Section 7 tells you how to stop and get out of the system once you are finished.

More elaborate procedures, such as plotting and statistical analysis of the data, are not described. These features are available through EMR, though, and users who desire them should discuss their needs with the Data Administrator. If such routines are commonly used, they can be added to the CANUT packages.

The user should also have the Data Standards Manual which defines each data element, describes the structure of the data base and lists the codes used in the system. Copies of the Data Standards Manual should be requested through the Data Administrator.

A variety of samples types are included -- some taken on or near tailings areas and some remote from the tailings. Mixing these data could create problems of interpretation. The data are accepted from contributors with little editing. Therefore, you should consult with the Data Administrator when first using specific data and when results do not appear correct or as you would expect.

Users who want more knowledge of the system should attend the seminar on reporting using Natural Language which is offered by EMR's Computer Science Centre.

DEFINITIONS AND STRUCTURE

Computing, like other sciences, has a very specific language. We try not to use technical jargon, but some terms are unavoidable for the sake of brevity.

Hierarchical Structure

System 2000 (S2K) is a database management system which is useful for data bases having an hierarchical or tree-like logical structure. CANUT was created with such a structure (Figure 1). The data base links the different levels and describes in detail the data within each level. A copy of the description can be obtained by using the DESCRIBE command (section 6).

Key Items

Data items may be designated as KEY or NON-KEY. System 2000 creates and maintains an index of values for each data item which is defined as KEY (the default designation). This index is used to locate rapidly data related to items having particular values.

No indexes are built for NON-KEY items. This approach saves storage space, but it takes more time to locate the data. If you wish to search for all samples taken with an accuracy of more than 20 meters (Item 707), the system would have to search the entire data base because the data item LOCATION ACCURACY is non-key. (See CANUT Data Base Definition in the Data Standards Manual.) If you wished to retrieve all samples taken after December 1981 (Item 702), the system would find the values in the Sample Date Index and search only those records because SAMPLE DATE is a key item.

Users should inform the Data Administrator of items which are searched frequently so they can be designated as key items in the final system.

Abbreviations

To extract data from the CANUT database, you must "tell" the computer what you wish to retrieve and how it should be formatted. To do this, you must type in the instructions and the data elements that you wish to retrieve. Since most of us are not speedy typists and have been known to make the occasional typing error, we would like to have the instructions as short as possible. To accomplish this we use abbreviations. A little time spent learning them now will save more time and mistakes in the future.

The abbreviations are of three types. The first are two letter abbreviations of English words. They may not make much sense on first reading, but they will as you use them. Do not sit down and memorize them. Refer to the User's Manual when making your commands. The abbreviations will be learned quickly, with little conscious effort on your part.

WH means WHERE
OB means ORDERED BY or sorted in ascending sequence
EQ means EQUALS
NE means NOT EQUAL TO
LT means LESS THAN
LE means LESS THAN OR EQUAL TO
GT means GREATER THAN
GE means GREATER THAN OR EQUAL TO

There are also a few abbreviations that are in common usage.

MIN means MINIMUM
MAX means MAXIMUM
AVG means AVERAGE (arithmetic mean)

The third type of abbreviation is the use of a number for the name of a component (or data element or field). It is possible to spell out the name of the component that you want. However, you must get the name exactly as it is in the system -- the same spelling and hyphenation. To avoid the long typing and inevitable errors, we use the number of the component.

Instead of asking for TAILINGS-SITE-IDENTIFIER, you ask for C1. Similarly, STUDY-AUTHOR-LAST-NAME is C601.

A complete list of components is given in the Data Dictionary in the Data Standards Manual.

Symbols

You will see several items on the screen that the computer prints back to you. To your chagrin, most of them will be error messages which indicate what you did wrong. These are of limited use to the casual user.

The other type of symbol will be prompts by the system -- that is, signals to you to put in information. You will use two of these from the very beginning.

COMMAND - this request for a command is given if you are not yet in CANUT. You must reply to it as shown in login procedures, section 3.

--- Once in CANUT, three hyphens are the signal for you to put in a command to retrieve or manipulate data.

Two symbols that you have to use are:

% a percentage sign must end all normal commands. The percentage sign followed by a carriage return is the signal to the machine to begin processing.

* an asterisk should precede and follow all preset commands.

(CR) in this manual means "carriage return". On most terminals the key is marked "return" or "CR".

GETTING STARTED

To use CANUT, you must have

1. An account number
2. A password
3. A terminal connected to the computer.

Account Number and Password

The account number and password are provided by the CANUT Data Administrator. If you plan to use the system, telephone him a few days in advance of your first session so he can arrange for you to get access. Your account number and password will provide you access without further intervention by the Data Administrator.

Terminals

The Computer Science Centre at EMR has on-line terminals for users. If you are not at the EMR centre, however, you will have to provide your own terminal.

Normal settings on a teletype-compatible terminal are: 300 or 1200 BAUD, FULL DUPLEX, EVEN PARITY, ONLINE mode.

Access by DATAPAC

By dialing a local DATAPAC telephone number, the user can access the EMR computer from anywhere in the country by simply keying in the proper destination code. (The Data Administrator has the list of these numbers.) The DATAPAC user must have an acoustic coupler or data set and a data quality telephone line. The following is the most commonly used procedure to access the computer:

		Network Response/ Operator Responses
1)	Turn on the terminal and data set/acoustic coupler. Ensure terminal is ONLINE.	
2)	Dial the DATAPAC telephone number and, when the high pitch tone is heard, - place data set in data mode, or - place telephone hand set in the acoustic coupler.	
3)	Type the period key followed by carriage return (CR)	.(CR)
4)	DATAPAC will identify itself and your network address and wait for your call request command.	DATAPAC: xxxxxx
5)	Enter a call request command for the CYBER 74 at EMR	20400010 (CR)
6)	Datapac will respond with a connection message. EMR CSC banner message will appear.	DATAPAC: CALL CONNECTED EMR TELECOMMUNICATIONS 20/07/81 16.11.11 HOSTID=MFA PLS LOGIN SVP

Continue with the normal login procedures.

LOGIN procedure at EMR computer

In answer to the login request from the EMR computer:

PLS LOGIN SVP

enter the following command:

LOGIN,IXXXX,PASSWORD (CR)

Where IXXXX is the user name and PASSWORD is the user password. To protect the confidentiality of user name/password information that information will not be printed when a user enters the LOGIN command.

If the login is successful, the user will be connected and the computer will respond:

```
11/02/82        LOGIN AT/A  16.11.41
                WITH/AVEC ID CD
                EQUIP/PORT 42/027
LAST/DERNIER    LOGIN 11/02/82  14.57.53
COMMAND -
```

DATAPAC users must enter an additional command after logging in to ensure proper echoing of characters. This command is:

(CTRL-P) SET 2:1 CR CR

where CTRL-P is the CONTROL key and P key pressed simultaneously and CR CR are 2 carriage returns.

Accessing System 2000

The Self-Contained Facility is accessed interactively by entering the following command:

```
COMMAND - ATTACH,CANUT,CANUTPROC,ID=IDBSE,MR=1(CR)
```

The system responds:

```
*S2KM280* NATURAL LANGUAGE
11/02/82  08.26.54 BEGIN SYSTEM 2000 RELEASE M2.80C

COMMAND -
```

To which you reply

```
COMMAND - CANUT (CR)
```

This command gets you into S2K and allows you to read data from the CANUT database.

DATA RETRIEVAL

The immediate access or Natural Language Facility of System 2000 provides extensive commands to interrogate or manipulate a database from a remote terminal. The Data Administrator can obtain manuals for you which contain an exhaustive list of commands. This section introduces the more common commands for retrieving data.

With these commands you can select a set of data elements that meet desired criteria and print them in a list or table. You can count the number of records that have a given characteristic, display the minimum or maximum values of a given element and compute the sum or average of the selected values.

To reduce the amount of typing necessary to request data, S2K allows you to use symbols and abbreviations. The commands in this manual use those abbreviations rather than spelling out the words.

To become familiar with the system, we suggest that you try each of these commands exactly as it is shown in the example before entering your own requests for the first time.

WHERE Clause

The purpose of the WHERE clause is to specify the conditions required to qualify data sets from which retrievals are to be made. The effect of a WHERE clause is to limit data retrievals to those portions of the data base which are of particular interest.

FORMAT

...WHERE (conditions exist) ;

where (conditions exists) is any one of the following statements:

(1) Unary Operator

(element)	exists

(2) Binary Operator

(element)	EQ (value)	equal
	NE	not equal
	LT	less than
	LE	less than or equal to
	GT	greater than
	GE	greater than or equal to

(3) Ternary Operator

(element)	SPANS (value) * (value)	
	NE	
	EQ	

where (element) is either the element name or component number.

The unary operator retrieves all data elements of a given type which exists in the database. The binary and ternary operators limit retrievals to a specified range of values.

The Boolean Operators AND, OR, NOT may be employed to indicate the logical relationship between the conditions found in the WHERE clause.

EXAMPLE of a WHERE clause with a binary operator:

A command to "print the titles of all studies of the Gunnar tailings site" can be written.

--- PRINT STUDY-TITLE WHERE TAILINGS-SITE EQUALS GUNNAR%

or, in short form:

--- PRINT C21 WH C1 EQ GUNNAR%

The result will be

21* NAQUADAT

(At that time, only NAQUADAT data were in the data base for Gunnar.)

System 2000 executes a WHERE clause with more than one condition from right to left. Therefore, the most exclusive condition of a WHERE clause should be placed to the right to reduce search time.

TALLY Command

The purpose of the TALLY command is to provide the frequency of occurrence of unique values of a key component in the data base. There are two TALLY options: TALLY/EACH and TALLY/ALL. TALLY/EACH provides a count for each unique value for the specified component, TALLY/ALL gives the minimum and maximum unique values. Specifying either EACH or ALL resets the default for subsequent TALLY commands.

FORMAT

TALLY/EACH/(component list)%
TALLY/ALL/(component list)%

Where (component list) is one or more C's each followed by an integer component number separated by commas.

EXAMPLES:

```
---  TALLY/ALL/C1%
**********************************
     ITEM-       TAILINGS SITE
**********************************
     MINIMUM-
----------------------------------
     MAXIMUM-
----------------------------------
     29 DISTINCT VALUES
----------------------------------
     29 TOTAL OCCURRENCES

---  TALLY/EACH/C4%
**********************************
     ITEM-       PROVINCE
**********************************
     OCCURRENCES VALUE
----------------------------------
      1            NW
     20            ON
      8            SA
----------------------------------
     3    DISTINCT VALUES
----------------------------------
     29   TOTAL OCCURRENCES
```

PRINT Command

The purpose of the PRINT command is to retrieve specified data items from the data base and print them in a simple sequential list. The PRINT command has two basic forms: one with a WHERE clause and one without.

When no WHERE clause is present, the retrieval will represent not only the hierarchical data structure but also the logical order of data set construction. This form is not used often as it results in a complete printout of the entries in the specified data.

When the command includes a WHERE clause, the WHERE clause is processed first so that only that portion of the data which qualifies for the specified conditions wil be output.

FORMAT

PRINT (print clause)%
PRINT (print clause) WHERE (conditions exist)%

where (print clause) is a list of one or more data items, and

(conditions exist) is a series of legal WHERE conditions

EXAMPLE:

Print site name, mine name and owner of all Saskatchewan tailings sites.

```
---  PRINT C1, C2, C3 WH C4 EQ SA%

1*   KEY LAKE
2*   KEY LAKE
3*   KEY LAKE
1*   RABBIT L.
2*   RABBIT L.
3*   GULF MINERALS
1*   TAILINGS LAKE
2*   ELDORADO-S
3*   ELDORADO
```

Note: This is only the first three of the eight sets.

PRINT COUNT Command

The PRINT COUNT option is very useful to anticipate the amount of output which will be generated by the PRINT command.

```
PRINT COUNT C700%
```

will provide a numerical count of all samples (Item 700) the data base. Therefore, before using the PRINT command, COUNT may save time by indicating the amount of data to be output.

EXAMPLES

Print the number of TAILINGS SITES in the data base.

```
---  PRINT COUNT C1%
CNT 1* 29
```

Print the number of MEASUREMENTS on the NORDIC TAILINGS SITE

```
---  PRINT COUNT C1100 WH C1 EQ NORDIC%
CNT 1100* 26
```

LIST Command

The purpose of the LIST command is to control the data output by having it set in a columnar format with optional page headings and footings. The output from a PRINT statement is always a single vertical column of data, but with the use of the LIST command, output can be displayed in multiple columns, one for each item specified.

FORMAT

LIST (list clause) WHERE (conditions exist)%

where (list clause) is a component list
(conditions exist) is a series of legal WHERE conditions

Page heading and title specifications are described in the appropriate System 2000 manuals.

Caution: Ensure that your list does not exceed the horizontal page or screen width if you want a properly formatted table.

EXAMPLE:

List tailings site name, mine name and owner of all Saskatchewan tailings sites.

```
--- LIST C1, C2, C3 WH C4 EQ SA%

TAILINGS-SITE-IDENTIFIER     MINE-NAME        OWNER
* KEY LAKE                   KEY LAKE         KEY LAKE
* RABBIT L.                  RABBIT L.        GULF MINERALS
* TAILINGS LAKE              ELDORADO-S       ELDORADO
```

Note: This is only first three of eight sites.

Compare this list with the similar PRINT command

List the sum and average of all measurement values for the Nordic mine.

```
--- LIST SUM C1102, AVG C1102 WH C2 EQ NORIDC %

                          SUM VALUE                AVG VALUE
***
*                 2.08388497959995E+07     3.78200540762241E+04
```

LIST COUNT Command

LIST COUNT works like PRINT COUNT to get the number of entries along with statistical data.

EXAMPLE:

Print the number of MEASUREMENTS for the NORDIC mine along with Minimum, Maximum and Average values.

```
--LIST COUNT C1101, MIN C1102, MAX C1102, WH C2 EQ NORDIC$

  CNT MATERIAL              MIN VALUE                MAX VALUE
***
*             525 1.00000000000000E-02   9.99999000000000E+50
```

PRESET Commands

Commands that are used frequently can be stored. Four such commands have been prepared for CANUT for demonstration purposes.

4001* PROVINCIAL COUNT REPORT does the same as

TALLY/EACH/ C4%

EXAMPLE:

```
--*PROVINCIAL COUNT REPORT*

*******************************
     ITEM-       PROVINCE
*******************************
     OCCURRENCES  VALUE
-------------------------------
       1             NW
      20             ON
       8             SA
-------------------------------
      3     DISTINCT VALUES
-------------------------------
      29    TOTAL OCCURRENCES
```

4002* PROVINCIAL SITES REPORT does the same as

```
LIST/TITLE D(20) PROVINCIAL SITES REPORT, L(20) SITE NAME,
L(20) MINE NAME, L(20) OWNER NAME/C1,C2,C3, OB C1 WH C4 EQ
*1*$
```

where *1* denotes that one element is selected.

EXAMPLE:

```
--*PROVINCIAL SITES REPORT(SA)*
```

PROVINCIAL SITES REPORT
83/05/05

SITE NAME	MINE-NAME	OWNER NAME
***		
* AMOK	AMOK	CLUFF MINING
* GUNNAR	GUNNAR	MACNAMARA
* KEY LAKE	KEY LAKE	KEY LAKE
* NERO	LORADO	LORADO
* RABBIT L.	RABBIT L.	GULF MINERALS
* RABBIT L. MINE	COLLINS BAY	GULF MINERALS
* TAILINGS LAKE	ELDORADO-S	ELDORADO
* UPSTREAM	GUNNAR	MACNAMARA

4003* SITE STUDIES REPORT does the same as

```
LIST/TITLE D(20) SITE STUDIES REPORT, L(35) STUDY TITLE,
L(25) MAIN SPONSOR, L(9) PUB. DATE/C21,C22,C23, OB C23 WH
C1 EQ *1*&
```

EXAMPLE:

```
--*SITE STUDIES REPORT(GUNNAR)*

                    SITE STUDIES REPORT
                         83/05/05

STUDY-TITLE          MAIN-SPONSOR                PUB.DATE

***
* NAQUADAT           ENVIRONMENT CANADA          8203
* NAQUADAT           ENVIRONMENT CANADA          8302
```

4004* STUDY SAMPLES REPORT does

LIST/TITLE D(20) STUDY SAMPLES REPORT, L(7) IDENT., L(20) DESCRIPTION, L(6) TREAT., L(4) ZONE, R(9) EASTING, R(10) NORTHING/C704, C706, C710, C708, C709, OB C704 WH C1 EQ AND C21 EQ *2*&

where *1* and *2* denote that two elements are selected.

EXAMPLE:

--*STUDY SAMPLES REPORT (NORDIC, NAQUADAT) &

STUDY SAMPLES REPORT
83/05/05

IDENT	DESCRIPTION	TREAT	ZONE	EASTING	NORTHING
***					
*5999999	J.F. Thomas		17	379526.0	5137583.9

BREAK Command

Occasionally the user may enter a command which generates an inordinate amount of output at the terminal. To abort such a request the computer processing can be interrupted by typing the BREAK key (or %A) several times.

Note that this signals an abnormal interruption and results in the user being dropped from System 2000 to the command level. The user should then either restart System 2000 or signoff.

BATCH JOBS

The terminal is usually used interactively but may also be used in batch mode for retrievals that require extensive processing time or produce a large amount of output. The program may be submitted from a terminal with the output routed either to the line printer at EMR or to the terminal.

The procedure is to:

1) Create a submission file using TXTEDIT

```
Command-TXTEDIT                    Comments
++ Auto from 10                    System prompts with line
                                   number and equal sign
10=USERN, CM60000,T150,P2          USERN-User number
20=ACCOUNT, nnnnn.                 nnnnn - account number
30=BEGIN, S2K
40=*EOR
50=USER, READ%
60=SHARED DBN IS CANUT%
70=(immediate access command)      1 or more commands
80=EXIT%
90==                               type = to end input phase
++SAVE, IA, NS                     save as a local file
++BYE
COMMAND-
```

2) Submit the file for batch processing to be retrieved later

```
COMMAND - BATCH, IA, INPUT, HERE
COMMAND - LOGOUT
```

3) Retrieve the completed job

The following message will appear at login once the job is finished:

```
YOU HAVE REMOTE OUTPUT FILES

COMMAND-FILES
--REMOTE OUTPUT FILES--
  USERN??                              (user number followed by
                                       any two characters)

COMMAND-BATCH, USERN??, LOCAL
```

To preview the job to determine if it has worked properly use the PAGE utility. If your terminal can print 132 columns enter

```
COMMAND-%LP 132
```
before using the PAGE utility.

```
COMMAND-PAGE, USERN??
Ready....
+

(the first 10 lines of the output will be printed)

=/string/  (optional)

(the first line containing the string will be printed plus the
next 9 lines)

*                                      (locates the end of the file)

(end of information reached)

line nnn                               (the number of lines in the
E                                      file is nnn).
```

COMMAND-

To print USERN?? at your terminal:

COMMAND-REWIND,USERN??
COMMAND-CONNECT,OUTPUT
COMMAND-COPYSBF,USER??, OUTPUT

To print USERN?? at EMR (they will mail the job to you):

COMMAND-BATCH,USERN??,PRINT
COMMAND-LOGOUT

DATA UPDATING

During the prototype stage, all data updating should be done through the Data Administrator. The prototype should be changed as experience with it is gained and new requirements are identified. The Data Administrator will be aware of the latest version of the system.

DESCRIBE Command

The purpose of the DESCRIBE command is to list either a copy of the data base description or a specified portion of it.

FORMAT

```
DESCRIBE %
DESCRIBE (component number)%
DESCRIBE (component number) THROUGH (component number)%
DESCRIBE STRINGS %
```

EXAMPLES

```
---DESCRIBE C12%
     12* TAILINGS START DATE (DATE IN 10)%

---DESCRIBE C101 THRU C103%
        101* CONTAINMENT TYPE (CHAR XXX IN 100)%
        102* CONTAINMENT DATE (DATE IN 100)%
        103* ENGINEERING REFERENCE (CHAR X(100) IN 100)%

--DESCRIBE C4003%


4003*   SITE STUDIES REPORT (STRING "LIST/TITLE D(20) SITE
        STUDIES REPORT, L(35) STUDY TITLE, L(25) MAIN
        SPONSOR, L(9) PUB.DATE/C21, C22, C23, OB C23 WH C1
        EQ *1*%)%

--DESCRIBE C4004%

4004*   STUDY SAMPLES REPORT (STRING "LIST/TITLE D(20)
        STUDY SAMPLES REPORT, L(7) IDENT,m L(20)
        DESCRIPTION, L(6) TREAT., L(4) ZONE, R(9) EASTING,
        R(10) NORTHING/C704,C706,C713,C710,C708,C709, OB
        704 WH C1 EQ *1* AND C21 EQ *2*)%
```

HOW TO STOP

Typing the command:

EXIT↵

will close the data base and exit from System 2000. The user is still attached to the EMR computer, however, and needs to signoff by typing

LOGOUT

at which time the computer will respond with statistics about the session and signoff the user:

```
CPA                    2.692 SEC.          .224
IO                    24.642 SEC.          .205
CM                   720.491 KWS.          .199
TOTAL (P2 RATE/TAUX)$                      .629
CONN (300 BAUD) 0:11                    $ 1.000
11/02/82  15.05.27
```

After signing off the computer

- remove telephone hand set from acoustic coupler and hang up or
- pick up telephone hand set, clear data set and hang up
- turn off the terminal.